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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,740	08/01/2003	Laurent Bellaiche	8793-52026	3856

7590 08/31/2004
Wright, Lindsey & Jennings LLP
Suite 2300
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Little Rock, AR 72201

EXAMINER

KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 08/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/632,740	Applicant(s) BELLAICHE ET AL. S.C.	
	Examiner C. Melissa Koslow	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/1/04; 3/12/04</u> . | 6) <input type="checkbox"/> Other: ____ |

The Swedish reference cited in the information disclosure statement filed 12 March 2004 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 1-11 of this application.

The provisional application only teaches $\text{Pb}(\text{Sc,Nb})\text{O}_3$ ordered along the [001] direction where the amount of niobium and scandium in each atomic plane is modulated. This teaching does not support the claimed materials.

Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 9 are indefinite as to the actual total number of A and B elements in the material since the listing of multiple A and B variables implies a minimum of three different elements are present, but the description in line 4 of both claims indicate the minimum number of A (claim 9) or B (claim 1) is two. Claim 3 is indefinite since teaches only one A element which is counter to claim 1 which teaches at least 3 A elements. Claim 5 is indefinite since teaches only two B elements which is counter to claim 1 which teaches at least 3 B elements. The term "short" in claims 1 and 9 is a relative term which renders the claim indefinite. The

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term "short" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification only teaches a four-plane period, thus it cannot be determined what other number of plane periods meet the claimed "short stacking period".

Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification only teaches $\text{Pb}(\text{Sc},\text{Nb})\text{O}_3$ ordered along the [001] direction where the amount of niobium and scandium in each atomic plane is modulated. This teaching does not support the claimed materials.

Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for $\text{Pb}(\text{Sc},\text{Nb})\text{O}_3$ ordered along the [001] direction where the amount of niobium and scandium in each atomic plane is modulated, does not reasonably provide enablement for any ferroelectric perovskite atomically ordered along a direction that is not the polarization direction. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(f) he did not himself invent the subject matter sought to be patented.

Claims 1, 3, 5, 7 and 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the article by Park et al.

This article teaches lead perovskite ferroelectric materials which are ordered along the [001] direction. These perovskites are composed of stacked planes and have as the B elements Zn and Nb or Ti, Zn and Nb. Table 1 shows that the taught materials have piezoelectric and dielectric properties substantially enhanced over those properties when these materials are polarized, which means the properties must also be substantially enhanced over those properties when the materials are disordered since these properties in the polarized material is greater over the disordered material. The article indicates these properties were measured at room temperature, since there is no temperature given. Room temperature is less than the Curie temperature of the taught materials. The reference teaches the claimed material.

Claims 1, 3, 7 and 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the article by Bellaiche et al.

This article teaches a lead perovskite ferroelectric material which are ordered along the [001] direction. This perovskite is composed of stacked planes and have as the B elements Ti and Zr. The tables show that the taught materials have piezoelectric and dielectric properties substantially enhanced over those properties when these materials are polarized, which means the properties must also be substantially enhanced over those properties when the materials are

disordered since these properties in the polarized material is greater over the disordered material. The article indicates these properties were measured at room temperature, since there is no temperature given. Room temperature is less than the Curie temperature of the taught materials. The reference teaches the claimed material.

Claims 1-5, 7 and 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the article by Al-Barakaty et al.

This article teaches a lead perovskite ferroelectric material which are ordered along the [001] direction. This perovskite is composed of four-plane stacks and have as the B elements Ti, Sc and Nb. The table shows that the taught materials have piezoelectric and dielectric properties substantially enhanced over those properties when these materials are disordered. The article indicates these properties were measured at room temperature, since there is no temperature given. Room temperature is less than the Curie temperature of the taught materials. The reference teaches the claimed material.

Claims 1 and 3-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the article by George et al.

This article teaches a lead perovskite ferroelectric material which are ordered along the [001] direction. This perovskite is composed of 12-plane stacks and have as the B elements Sc and Nb. The last page shows that the taught materials have piezoelectric and dielectric properties substantially enhanced over those properties when these materials are disordered. The article indicates these properties were measured at room temperature, since there is no temperature given. Room temperature is less than the Curie temperature of the taught materials. The reference teaches the claimed material.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the abstract and slides of the presentation given in February 2001.

These references teach a lead perovskite ferroelectric material which are ordered along the [001] direction. This perovskite is composed of four-plane stacks and have as the B elements Sc and Nb. Slides 10 and 15 teach the same planar composition as that taught in the specification. Slides 11 and 12 show that the taught materials have piezoelectric and dielectric properties substantially enhanced over those properties when these materials are disordered. The references indicate these properties were measured at room temperature, since there is no temperature given. Room temperature is less than the Curie temperature of the taught materials. The references teach the claimed material.

Claims 1-8 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by the Thesis by A. George.

The thesis teaches a lead perovskite ferroelectric material which are ordered along the [001] direction. This perovskite is composed of four-plane stacks and have as the B elements Sc and Nb. Pages 18 and 30 teach the same planar composition as that taught in the specification. Pages 20, 23, 24 and 25 teach the taught materials have piezoelectric and dielectric properties substantially enhanced over those properties when these materials are disordered. The references indicate these properties were measured at room temperature, since there is no temperature given. Room temperature is less than the Curie temperature of the taught materials. The references teach the claimed material.

Claims 1-8 are rejected under 35 U.S.C. 102(f) because the applicant did not invent the claimed subject matter. The thesis and the presentation in February 2001 raise the question as to

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who is the actual inventor of the invention of claims 1-8; Aaron M. George, Aaron M. George and Laurent Bellaiche or Aaron M. George, Laurent Bellaiche and Jorge Iniguez. This application currently names joint inventors. In considering patentability of the claims, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (571) 272-1362.

The fax number for all official communications is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
August 30, 2004


C. Melissa Koslow
Primary Examiner
Tech. Center 1700